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SPECIFICATION FOR STEEL WIRE FOR NEEDLES

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SPECIFICATION FOR STEEL WIRE FOR NEEDLES

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(*Continued on page* 2)

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SPECIFICATION FOR STEEL WIRE FOR NEEDLES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 15 September 1981, after the draft finalized by the Wrought Steel Products Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard has been prepared with a view to helping the needle producing industries with regard to the use of proper quality of steel wire for different types of needles. However, it does not deal with machine sewing needles which will be covered by a separate Indian Standard.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements for steel wires for needles for hand sewing and gramophone.

1.2 The various types of needles covered in this standard shall be as follows:

a) *Hand Sewing*

  i) Domestic and tailors including embroidery and drawing,
  ii) Sail makers,
  iii) Glovers,
  iv) Saddlers,

---

*Rules for rounding off numerical values (*revised*).

v) Hardness,
vi) Packers,
vii) Upholsters,
viii) Palm makers, and
ix) Tacking.

b) *Gramophone Needles*

2. TERMINOLOGY

2.1 For the purpose of this standard, the definition given in IS : 1956 (Part V)-1976* shall apply.

3. SUPPLY OF MATERIAL

3.1 General requirements relating to the supply of steel wire for needles shall be as given in IS : 8910-1978†.

4. MANUFACTURE

4.1 The wire shall be cold drawn from steel made by open hearth, electric duplex, basic oxygen or a combination of these processes. In case any other process is employed by the manufacturer, prior approval of the purchaser shall be obtained.

5. CHEMICAL COMPOSITION

5.1 The ladle analysis for the various types of wires for needles when analysed in accordance with the relevant parts of IS : 228‡ shall conform to the following requirements:

	Constitutent, Percent		
	Grade I	Grade II	Grade III
Carbon	0·66 to 0·75	0·76 to 0·85	0·10 *Max*
Manganese	0·50 to 0·90	0·50 to 0·90	0·40 to 0·70
Silicon	0·10 to 0·35	0·10 to 0·35	0·03 *Max*
Sulphur	0·040 *Max*	0·040 *Max*	0·040 *Max*
Phosphorus	0·040 *Max*	0·040 *Max*	0·040 *Max*

NOTE — Grade I wire is normally used for sizes more than 1 mm and Grade II for sizes up to 1 mm.

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*Glossary of terms relating to iron and steel: Part V Bright steel bar and steel wire (*first revision*).

†General technical delivery requirements for steel and steel products.

‡Methods for chemical analysis of steels. (Being issued in parts.)

5.2 Product Analysis — The permissible variation in case of product analysis on the limits specified above shall be as follows:

Constituent	*Permissible Variation Over the Specified Limit, Percent*
Carbon up to 0·10 percent	+ 0·01
Over 0·60 percent	± 0·03
Managanese	± 0·03
Silicon	± 0·05
Sulphur	+ 0·005
Phosphorus	+ 0·005

Note — The variation shall not be applicable both over and under the specified limit in several determinations in a heat.

6. NOMINAL SIZE OF WIRE

6.1 Wire for different types of needles shall be of the following diameter:

mm	mm	mm	mm
0·125	0·315	0·80	2·00
0·140	0·355	0·90	2·24
0·160	0·400	1·00	2·50
0·180	0·450	1·12	2·80
0·200	0·500	1·25	3·15
0·224	0·560	1·40	3·55
0·250	0·630	1·60	4·00
0·280	0·710	1·80	4·50

Note — Sizes other than those mentioned above shall be supplied subject to agreement between the purchaser and the manufacturer.

6.2 Tolerance — The tolerances permitted on the diameter of wire shall be ± 1 percent of the diameter with a minimum of ± 0·01 mm.

Note — Closer tolerances other than those given above may be agreed to between the purchaser and the manufacturer at the time of enquiry and order.

6.3 The maximum difference between two readings taken on any two diameters of the cross section of the wire shall not exceed half of the tolerance specified in **6.2** for the corresponding diameter of the wire.

7. PHYSICAL PROPERTIES

7.1 Tensile Test — The tensile properties of wire, when tested in accordance with IS : 1521-1972*, shall be as follows:

Grades	*Tensile Strength, MPa*
I	610-730
II	630-760
III	490-690

NOTE — 1 MPa = 1 N/mm^2 = 1 MN/m^2 = 0·102 0 kgf/mm^2.

7.2 Wires of Grades I and II shall be fully spheroidised.

7.3 Decarburisation — Total decarburisation shall not exceed 1 percent of the diameter of wire.

8. FINISH

8.1 The wire shall have one of the following finishes as specified by the purchaser at the time of enquiry and order:

- a) Bright drawn,
- b) Copper coated,
- c) Brass coated, or
- d) Bronze coated

9. FREEDOM FROM DEFECTS

9.1 All finished wires shall be well and cleanly drawn to the dimensions specified. The surface of wire shall be clean, uniform, smooth and free from harmful defects such as pit marks, pores, scratches, longitudinal and transverse cracks, etc, which are detrimental to the end use of product.

10. COATING TEST

10.1 The amount of copper, brass or bronze coating on steel wire and its method of testing shall be subject to agreement between the purchaser and the manufacturer (*see* IS : 1772-1973†, IS : 1773-1961‡ and IS : 3203-1965§).

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*Method for tensile testing of steel wire (*first revision*).
†Specification for electroplated coatings of copper (*first revision*).
‡Specification for brass plating.
§Methods of testing local thickness of electroplated coatings.

11. SAMPLING

11.1 Unless otherwise agreed to, the method of drawing representative samples of wires and criteria for conformity shall be as specified in Appendix A.

12. PACKING

12.1 Each coil of wires shall be suitably bound and fastened completely and shall be oiled properly before wrapping with polythene and jute.

13. MARKING

13.1 Each coil of wire shall be legibly marked with the following:

a) Size of wire,
b) Lot number,
c) Finish,
d) Name of the manufacturer or his trade-mark, and
e) Any other mark required by the purchaser.

13.2 The material may also be marked with ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

APPENDIX A

(*Clause* 11.1)

SAMPLING AND CRITERIA FOR CONFORMITY

A-1. LOT

A-1.1 In any consignment, all the coils of wire of the same grade and diameter, manufactured under essentially similar conditions of manufacture, shall be grouped together to constitute a lot.

A-1.1.1 Samples shall be taken from each lot and tested for conformity to the standard.

A-2. SAMPLING

A-2.1 The number of coils to be taken from a lot shall be according to col 1 and 2 of Table 1. These samples shall be taken at random by using number tables (*see* IS : 4905-1968*).

TABLE 1 SCALE OF SAMPLING AND PERMISSIBLE NUMBER OF DEFECTIVES

No. of Coils in a Lot (1)	No. of Coils for Physical Requirements (2)	Permissible No. of Defective Coils (3)	No. of Tests for Chemical Requirements (4)
Up to 25	2	0	1
26 to 50	3	0	1
51 to 150	5	0	2
151 to 300	8	1	2
301 and above	13	1	2

A-3. PREPARATION OF SAMPLES AND NUMBER OF TESTS

A-3.1 Test and Physical Requirements — From the coils selected from col 1 and 2 of Table 1, adequate length of test piece shall be cut from each end and subjected to physical tests, namely, size, surface condition, tensile, and coating tests. A test piece failing to meet any one of the requirements shall be called a defective. If the number of defectives found is less than or equal to the permissible number of defectives specified in col 3 of Table 1, the lot shall be considered to have conformed to physical requirements.

A-3.2 Tests for Chemical Requirements — Unless otherwise agreed, the following procedure shall be followed for chemical requirements:

> From those test pieces which have conformed to physical requirements further test pieces shall be selected at random according to col 4 of Table 1. These samples shall be tested for all the chemical requirements. If a test piece fails to meet the respective chemical requirement, it shall be called a defective. The lot shall be considered to have conformed to the chemical requirements if all the individual test pieces tested for chemical requirements pass the test.

A-4. CRITERIA FOR CONFORMITY

A-4.1 A lot shall be considered to have conformed to the requirements of the specification if **A-3.1** and **A-3.2** are satisfied.

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*Methods for random sampling.

AMENDMENT NO. 1 SEPTEMBER 1984

TO

IS:9962-1981 SPECIFICATION FOR STEEL WIRE FOR NEEDLES

Alterations

(*Page 4, clause 5.1, first three lines*) - Substitute the following for the existing matter:

'5.1 The ladle analysis of steel for the various types of wires for needles, when carried out either by the method specified in the relevant parts of IS:228‡ or any other established instrumental/chemical method shall have the following chemical composition. In case of dispute the procedure given in IS:228‡ and its relevant parts shall be referee method.'

(*Page 7, clause 11.1*) - Substitute the following for the existing matter:

'11.1 Unless otherwise agreed to, the method of drawing representative samples of wires and criteria for conformity shall be as specified in IS:10206-1982*.'

(*Page 7*) - Add the following foot-note at the bottom of the page:

'*Methods of sampling steel wires.'

(*Pages 7 and 8, Appendix A*) - Delete.

(SMDC 5)

Reprography Unit, ISI, New Delhi, India